

PROGRAM CODE

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#include<stdio.h>
#include<stdlib.h>
#include<string.h>
void main ()
{
    FILE *f1, *f2, *f3, *f4, *f5;
    int lc, sa, i = 0, j = 0, m[10], pgmlen, len, k, len1, l = 0;
    char name[10], opnd[10], la[10], mne[10], s1[10], mne1[10], opnd1[10];
    char lcs[10], ms[10];
    char sym[10], symaddr[10], obj1[10], obj2[10], s2[10], q[10], s3[10];

    f1 = fopen ("input2.txt", "r");
    f2 = fopen ("opnd2.txt", "r");
    f3 = fopen ("symtab.txt", "w+");
    f4 = fopen ("symtab1.txt", "w+");
    f5 = fopen ("output.txt", "w+");
    fscanf (f1, "%s%s%s", la, mne, opnd);
    if (strcmp (mne, "START") == 0)
    {
        sa = atoi (opnd);
        strcpy (name, la);
        lc = sa;
    }
    strcpy (s1, "*");
    fscanf (f1, "%s%s%s", la, mne, opnd);
    while (strcmp (mne, "END") != 0)
    {
        if (strcmp (la, "-") == 0)
        {
            fscanf (f2, "%s%s", mne1, opnd1);
            while (!feof (f2))
            {
                if (strcmp (mne1, mne) == 0)
                {
                    m[i] = lc + 1;
                    fprintf (f3, "%s\t%s\n", opnd, s1);
                    fprintf (f5, "%s\t0000\n", opnd1);
                    lc = lc + 3;
                    i = i + 1;
                    break;
                }
                else
                    fscanf (f2, "%s%s", mne1, opnd1);
            }
        }
        else
        {
            fseek (f3, SEEK_SET, 0);
        }
    }
}
```

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fscanf (f3, "%s%s", sym, symaddr);
while (!feof (f3))
{
    if (strcmp (sym, la) == 0)
    {
        sprintf (lcs, "%d", lc);
        fprintf (f4, "%s\t%s\n", la, lcs);
        sprintf (ms, "%d", m[j]);
        j = j + 1;
        fprintf (f5, "%s\t%s\n", ms, lcs);
        i = i + 1;
        break;
    }
    else
        fscanf (f3, "%s%s", sym, symaddr);
}
if (strcmp (mne, "RESW") == 0)
    lc = lc + 3 * atoi (opnd);
else if (strcmp (mne, "BYTE") == 0)
{
    strcpy (s2, "-");
    len = strlen (opnd);
    lc = lc + len - 2;
    for (k = 2; k < len; k++)
    {
        q[l] = opnd[k];
        l = l + 1;
    }
    fprintf (f5, "%s\t%s\n", q, s2);
    break;
}
else if (strcmp (mne, "RESB") == 0)
    lc = lc + atoi (opnd);
else if (strcmp (mne, "WORD") == 0)
{
    strcpy (s3, "#");
    lc = lc + 3;
    fprintf (f5, "%s\t%s\n", opnd, s3);
    break;
}
}
}

```

```

fseek (f2, SEEK_SET, 0);
fscanf (f1, "%s%s%s", la, mne, opnd);
}
fseek (f5, SEEK_SET, 0);
pgmlen = lc - sa;
printf ("H^%s^%d^0%x\n", name, sa, pgmlen);
printf ("T^");
printf ("00%d^0%x", sa, pgmlen);

```

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fscanf (f5, "%s%s", obj1, obj2);
while (!feof (f5))
{
    if (strcmp (obj2, "0000") == 0)
        printf ("^%s%s", obj1, obj2);
    else if (strcmp (obj2, "-") == 0)
    {
        printf ("^");
        len1 = strlen (obj1);
        for (k = 0; k < len1; k++)
            printf ("%d", obj1[k]);
    }
    else if (strcmp (obj2, "#") == 0)
    {
        printf ("^");
        printf ("%s", obj1);
    }
    fscanf (f5, "%s%s", obj1, obj2);
}
fseek (f5, SEEK_SET, 0);
fscanf (f5, "%s%s", obj1, obj2);
while (!feof (f5))
{
    if (strcmp (obj2, "0000") != 0)
    {
        if (strcmp (obj2, "-") != 0)
        {
            if (strcmp (obj2, "#") != 0)
            {
                printf ("\n");
                printf ("T^%s^02^%s", obj1, obj2);
            }
        }
    }
    fscanf (f5, "%s%s", obj1, obj2);
}
printf ("\nE^00%d", sa);
printf ("\n");
}

```

OUTPUT

```
admin_GK@administrator52: ~/Desktop
admin_GK@administrator52:~/Desktop$ gcc singlepass.c
admin_GK@administrator52:~/Desktop$ ./a.out
H^COPY^1000^0c
T^001000^0c^0000000^230000
T^1001^02^1006
T^1004^02^1009
E^001000
admin_GK@administrator52:~/Desktop$ cat symtab1.txt
ALPHA    1006
BETA     1009
admin_GK@administrator52:~/Desktop$ cat symtab.txt
ALPHA    *
BETA     *
admin_GK@administrator52:~/Desktop$ cat output.txt
00        0000
23        0000
1001      1006
1004      1009
admin_GK@administrator52:~/Desktop$ cat optab2.txt
LDA       00
STA       23
LDCH     15
STCH     18
admin_GK@administrator52:~/Desktop$ cat input2.txt
COPY      START    1000
-         LDA      ALPHA
-         STA      BETA
ALPHA     RESW     1
BETA      RESW     1
-         END      -
admin_GK@administrator52:~/Desktop$
```